

REMARKS

Acknowledgement is made of the Examiner's indication that Claim 21 has been allowed. Claim 12 has been amended to specify that the protein derivatives are the derivatives of at least one of fibroin, collagen and wool. No new matter has been added.

Claims 12, 19 and 20 have been rejected under 35 USC 103(a) as being unpatentable over Shepler et al. Claims 12, 19 and 20 have been rejected under 35 USC 103(a) as being unpatentable over Denzinger et al. Claims 12, 19 and 20 have been rejected under 35 USC 103(a) as being unpatentable over Kroner et al. Applicants respectfully traverse these grounds of rejection and urge reconsideration in light of the following comments.

The instant invention is directed to surface treatment chemicals which form a polymerization reaction product on the surface of a fiber and comprise a water-soluble organic substance selected from the group consisting of at least one of a protein selected from fibroin, collagen and wool derivatives thereof and polysaccharides, having an average molecular weight of 100 to 20,000, a polymerization initiator and a reactive modifier. In the present invention, the water-soluble organic substance and the reactive modifier take part in a graft polymerization reaction in the presence of a fiber to form a hydrophilic layer on the fiber. By controlling the average molecular weight of the water-soluble organic substance within 100 to 20,000, a superior moisture absorbency can be imparted to a synthetic fiber with the hydrophilic layer being very durable and having a soft feel on the fiber. It is respectfully submitted that the prior art cited by the Examiner does not disclose the presently claimed invention.

The Shepler et al reference discloses a copolymer reaction product of a reactive synthetic emulsion and a protein which is said to be an excellent adhesive coating or film. As pointed out by the Examiner, this reference has no

disclosure with respect to the molecular weight of the protein or the specific protein required by the present claims.

The Denzinger et al reference discloses water-soluble or water-dispersible graft polymers of proteins which are used as leather tanning agents. The Examiner states that the proteins usable in this reference are shown in Column 4, lines 28 et seq. and, because they are converted to soluble form by hydrolysis, acid enzymes, etc., this implies that they include low molecular weight proteins. However, like the previously discussed reference, there is no specific disclosure in this reference of the proteins having an average molecular weight of from 100 to 20,000. Given the importance of this limitation to the presently claimed invention, it is respectfully submitted that it is patentably distinguishable over Denzinger et al.

The Kroner et al reference discloses the preparation of water-resistant films and coatings or the treatment of films or coatings of water-soluble or dispersible grafted proteins prepared with monoethylenically unsaturated monomers at above 40°C and/or with at least one compound which is a hardener for proteins, and are disclosed as being useful as compostable packaging materials or as outer layers of diapers. As with the previously discussed references, this reference has no disclosure with respect to the molecular weight of the starting protein being in the range of from 100 to 20,000. Given the importance of the water-soluble organic substance of the present invention having the claimed molecular weight, it is respectfully submitted that the presently claimed invention is clearly patentably distinguishable thereover.

In the currently presented specification, there is objective evidence presented which establishes the unobviousness of the presently claimed invention. In Comparison 19 on page 29 of the "clean" copy of the substitute specification, surface treatment chemicals are produced which fall within the scope of the prior art except that the protein had a molecular weight outside of the scope of the present

claims. Tables 6 and 7 on page 31 of the substitute specification show the results of Experiment 7, which corresponds to the present invention, and Comparison 19, which used a high molecular weight protein. As shown by the results contained in Tables 6 and 7, the treatment chemicals of the present invention clearly had superior properties. This is clearly unexpected in light of the prior art cited by the Examiner and establishes the patentability of the presently claimed invention.

Reconsideration of the present application and the passing of it to issue is respectfully solicited.

Respectfully submitted,


Terrylene F. Chapman

TFC/smd

FLYNN, THIEL, BOUTELL
& TANIS, P.C.
2026 Rambling Road
Kalamazoo, MI 49008-1631
Phone: (269) 381-1156
Fax: (269) 381-5465

Dale H. Thiel	Reg. No. 24 323
David G. Boutell	Reg. No. 25 072
Ronald J. Tanis	Reg. No. 22 724
Terryence F. Chapman	Reg. No. 32 549
Mark L. Maki	Reg. No. 36 589
David S. Goldenberg	Reg. No. 31 257
Sidney B. Williams, Jr.	Reg. No. 24 949
Liane L. Churney	Reg. No. 40 694
Brian R. Tumm	Reg. No. 36 328
Robert J. Sayfie	Reg. No. 37 714

Encl: Postal Card

136.0703